

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 2, 8-10, 18-22, and 25-27 are pending in the application, with claims 2 and 22 being the independent claims. Claims 1, 3-7, 13-17, and 23-24 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. Support for the amendments to claims 2 and 22 may be found at least, in paragraph [0086] of the specification. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Information Disclosure Statement

Applicants note that references FP5-FP7 were lined through on the information disclosure statement filed on April 18, 2007. Applicants request that these references be initialed as having been considered as copies were provided and a concise explanation of the references was given in document NPL1 of the same information disclosure statement.

Applicants also request that the Examiner consider the information disclosure statement filed on June 18, 2007.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 8-10, 20-22, 25 and 26 were rejected under 35 U.S.C § 103(a) as being obvious over U.S. Patent No. 5,668,579 to Fujii *et al.* ("the Fujii patent") in view of U.S. Patent 4,877,745 to Hayes *et al.* ("the Hayes patent") and U.S. Patent No. 6,347,857 to Purcell *et al.* ("the Purcell patent"). Claims 5 and 6 were rejected under 35 U.S.C § 103(a) as being obvious over the Fujii patent in view of the Hayes patent and the Purcell patent and further in view of U.S. Patent No. 6,640,621 to Ward *et al.* ("the Ward patent"). Claims 18 and 19 were rejected under 35 U.S.C § 103(a) as being obvious over the Fujii patent in view of the Hayes patent and the Purcell patent and further in view of U.S. Patent No. 4,631,554 to Terasawa. Claim 27 was rejected under 35 U.S.C § 103(a) as being obvious over the Fujii patent in view of the Hayes patent and the Purcell patent and further in view of U.S. Patent No. 6,329,209 to Wagner *et al.* Applicants respectfully traverse these rejections.

Independent claims 2 and 22, as amended herein, recite a current detection means for detecting or detecting, respectively, "a current flowing between said diaphragm and separate electrodes during the period from the rising edge of the pulse of said drive voltage to the termination of discharge of the solution" and a discrimination means for discriminating or discriminating, respectively, "the existence of a defective discharge of solution as a result of whether a peak waveform of a differential waveform of the current detected during the period appears on the positive side two consecutive times." The prior art of record fails to disclose or suggest these recited features.

The Fujii patent discloses an ink jet print head with a circuit that detects a drive voltage and compares a voltage between a diaphragm and an electrode with a

predetermined voltage to lower the drive voltage when a measured value reaches a set value. This is performed in order to prevent contact between the electrode and the diaphragm by lowering the drive voltage, thereby preventing destruction of those elements. See col. 6, lines 41-54. The Fujii patent does not disclose or suggest that a current flowing between a diaphragm and separate electrodes differs between a normal discharge and an abnormal discharge, let alone that detecting a current flowing between a diaphragm and separate electrodes during the period from the rising edge of the pulse of a drive voltage to the termination of discharge of the solution and discriminating the existence of a defective discharge of solution as a result of whether a peak waveform of a differential waveform of the current detected during the period appears on the positive side two consecutive times. Accordingly, it would not have been obvious to one of ordinary skill in the art to include the recited features in device and method disclosed in the Fujii patent.

The Hayes patent and the Purcell patent also do not disclose or suggest the recited features. Therefore a combination of the Fujii, Hayes and Purcell patents fails to suggest or render obvious claim 2 and 22.

The Examiner relied on the Ward patent to reject claims 5 and 6, now cancelled, which have been incorporated into claims 2 and 22. The Ward patent is non-analogous art that discloses a shaft sensor in a reciprocating internal combustion engine that is used to detect the dynamic variation in intake air using a derivative signal to recognize the waveform inflection points. See col. 1, lines 40-61 and col. 5, lines 7-22. The Ward patent fails to disclose or suggest detecting a current flowing between a diaphragm and separate electrodes, let alone doing so during the period from the rising edge of the pulse

of a drive voltage to the termination of discharge of the solution and discriminating the existence of a defective discharge of solution as a result of whether a peak waveform of a differential waveform of the current detected during the period appears on the positive side two consecutive times. Furthermore, one skilled in the art would not have a reasonable expectation of success in incorporating the shaft sensor of the Ward patent into the inkjet print head of the Fujii patent.

Accordingly, a combination of the Fujii patent with any of the Hayes, Purcell and Ward patents fails to suggest or render obvious the claimed invention of claims 2 and 22. Therefore, claims 2 and 22, and claims 8-10, 18-21, and 25-27, which depend therefrom are patentable. Applicants respectfully request that the rejections of record be withdrawn and the claims allowed.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

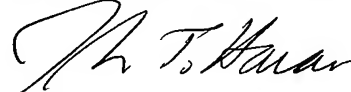
Reply to Office Action of September 18, 2007

FUJII *et al.*
Appl. No. 10/626,828

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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